



US005565109B1

**REEXAMINATION CERTIFICATE (3940th)****United States Patent** [19][11] **B1 5,565,109****Sweeny**[45] **Certificate Issued Nov. 23, 1999**

[54] **HYDANTOIN-ENHANCED HALOGEN  
EFFICACY IN PULP AND PAPER  
APPLICATIONS**

1 358 617 7/1974 United Kingdom .

**OTHER PUBLICATIONS**

Chemical Abstract No. 30168q, 1990.  
Feb. 28, 1997, Label for Lonza, Inc.'s DANTOBROM, EPA  
Reg.No.6836-117.  
Feb. 28, 1997, Label for Lonza, Inc.'s DANTOBROM RW,  
EPA.Reg.No.6836-115.  
Feb. 1, 1982, 1982 Annual Meeting of Cooling Tower  
Institute Article, (Matson).

*Primary Examiner*—Peter A. Hruskoci**Reexamination Request:**

No. 90/004,700, Jul. 22, 1997

**Reexamination Certificate for:**

Patent No.: **5,565,109**  
Issued: **Oct. 15, 1996**  
Appl. No.: **08/323,459**  
Filed: **Oct. 14, 1994**

[57] **ABSTRACT**

Free halogen sources (e.g., sodium hypochlorite and chlorine) added as slimicides in high organic component process streams such as pulp and paper processing are rendered more efficacious by the addition of selected N-hydrogen compounds (namely, 5,5-dimethylhydantoin, 5-ethyl-5-methylhydantoin, cyanuric acid, succinimide, urea, 4,4-dimethyl-2-oxazolidinone, and glycouril) to the process stream. The latter compounds may be added to the process stream before or after the slimicide is added or combined with the slimicide and added directly thereto. The direct use of halogenated hydantoins has also been found to provide improved efficacy relative to free halogen sources. In addition, absorbable organic halogen by-products are reduced.

[51] **Int. Cl.<sup>6</sup> ..... C02F 1/50**[52] **U.S. Cl. .... 210/755; 162/161; 210/754;  
210/756; 210/764**[56] **References Cited****U.S. PATENT DOCUMENTS**

5,565,109 10/1996 Sweeny ..... 210/755

**FOREIGN PATENT DOCUMENTS**

56-31492 3/1981 Japan .

JC879 U.S. PRO  
10/044594  
01/10/02